

IN THE SPECIFICATION:

Please REPLACE the paragraph beginning at page 10, line 6, with the following paragraph:

Figures 4 and 8 are block diagrams showing a second exemplary embodiment (method 2) of the data permutating module serving as the data supply means in the preceding stage, wherein Fig. 4 shows a preferred exemplary embodiment in the case where a is not smaller than "2" while Fig. 8 shows a preferred exemplary embodiment in the case where a is equal to "1". Each of the data permutating module 3B; 3C of the preceding stage shown in Figs. 4 and 8, respectively, is implemented in a two-stage structure including a first half part and a second half part. In the first half part, data trains are first generated each on an M-by-M data basis from the time-serial parallel data by a first data permutating circuit 310; 330 in correspondence to M-point radix 2 pipeline FFT circuits each having two parallel inputs/outputs, respectively, i.e., in a column of a (i.e., a-column of two two columns in each set of M data), whereon data permutation is so performed by means of the second data permutating circuit 320; 340 of the second half part that data is fetched one by one from blocks aligned in a column of a on an M-by-M data basis as generated in the first half part, whereby M data sets are obtained for every M-th data in terms of time-serial data.

Please REPLACE the paragraph beginning at page 18, line 18, with the following:

As described hereinbefore, the first data permutating circuit 310 is so designed as to rearrange or permute M data sets each consisting of M point data which are time-serially continuous into a-column of a a columns. More specifically, permutation is so performed that in each of the data sets, data are arrayed in a-column of two two columns. Processing procedure to this end will be described below.

Please REPLACE the paragraph beginning at page 21, line 14, with the following:

In the second half part of the permuting method 2 in the preceding stage, i.e., in the second data permuting circuit 320, data sets each consisting of M data mutually separated by M points on a time-serial basis are generated on the basis of the results of the first half part (first data permuting circuit 310) so that they can be inputted to a pipeline FFT circuits. In other words, it is necessary to permute them in ~~a column of a~~ a columns. Thus, ~~2 columns of a~~ 2a columns are formed as a whole, since each pipeline FFT circuit is implemented in two-parallel input configuration.

Please REPLACE the paragraph beginning at page 34, line 17, with the following:

Firstly, referring to Fig. 8, the first data permuting circuit 330 shown in this figure is so arranged as to permute M data sets each of M point data contiguous time-serially to ~~a column of one~~ one column. In particular, in each of the data sets, the data are so permuted to be ~~a column of two~~ two columns. Procedure to this end will so described below. M groups are processed as follows.

Please REPLACE the paragraph beginning at page 6, line 3, with the following:

Further, the Fourier transform apparatus according to the present invention features that the Fourier transform apparatuses described above are disposed in parallel in a number equal to a power of "2", time-serial input data are allocated to the Fourier transform apparatuses, respectively, on an N-by-N basis, where N (= M x M) represents a maximum number of points for Fourier transform, and that the Fourier transform apparatus includes a data distributing/permuting means for supplying sets of contiguous M point data on an ~~a~~-by-~~a~~ basis in ~~two parallel columns in parallel on a~~ two-by-two data basis in each set and hence ~~in 2a parallel columns in parallel on a 2a-by-2a data basis~~ in total to the Fourier transform apparatuses, respectively. This apparatus is described in the section (parallel disposition) in the description of the preferred mode for carrying out the invention.

Please REPLACE the paragraph beginning at page 21, line 21 with the following:

In the first data permutating circuit 310, the time-serially contiguous M-point data sets (each set consisting of ~~a column of two~~ two columns) are organized into ~~a column of a~~ a columns. Accordingly, by collecting subsequently the data at corresponding positions in the individual sets one-by-one, there can be acquired the data set consisting of M data mutually separated time-serially by M points on a time-serial basis. Since data in each data set are arrayed in ~~a column of two~~ two columns, each of the columns in the group includes two data points which belong to the same set of the contiguous M-point data. Thus, when reading is performed on a column-by-column basis, there can be obtained the data for two pipeline FFTs. In general, for the a pipeline FFT circuits, read-out processing may be performed on an $a/2$ -by- $a/2$ column basis.

Please REPLACE the paragraph beginning at page 28, line 4, with the following:

In the data permutating module 4A of the succeeding stage shown in Fig. 5, data sets each of M data separated by M points are formed from the FFT output array of the preceding stage to be permuted in ~~a column of a~~ a columns. In particular, data in each data set are arrayed in ~~a column of two~~ two columns. Since in the output of the preceding stage, M-point data sets (each set is in a column of two) are arrayed in ~~a column of a~~ a columns, there can be obtained the data set constituted by M data separated by M points can be obtained by collecting one-by-one the data of the corresponding positions in the individual sets.

Please REPLACE the paragraph beginning at page 28, line 12, with the following:

Since data in each data set are arrayed in ~~a column of two~~ two columns, each of the columns in the group contains two data which belong to the same M-point data set. Thus, when reading is performed on a column-by-column basis, there can be obtained

the data for the two pipeline FFT circuits. In general, for the a pipeline FFT circuits, data may be read out and permuted on an $a/2$ -by- $a/2$ column basis. Each group can be divided into A clusters each constituted by $a/2$ columns on the presumption that every cluster consists of $a/2$ columns.

Please REPLACE the paragraph beginning at page 36, line 18, with the following:

In the first data permutating circuit 330 of the preceding stage, the time-serially contiguous M point data sets (each set consisting of ~~a column of two~~ two columns) are organized into ~~a column of one~~ one column. Accordingly, by collecting subsequently the data at the corresponding positions in the individual sets one-by-one, there can be obtained the data set constituted by M data mutually separated by M points time-serially. Since the data in each set are arrayed in ~~a column of two~~ two columns, two data of each column in the group belong to other set also consisting of M data separated by M points. Assuming that the whole column is to be read out on a column-by-column basis, the other column is not immediately required but repeated read operation is required since only one set of pipeline FFT circuit is provided. However, because the pipeline FFT circuit is so implemented as to have two-parallel inputs/outputs, other one data of the same set of M data separated by M points is required. In other words, data read operation has to be performed simultaneously from the two groups.

Please REPLACE the paragraph at page 39, line 15, with the following:

In the data permutating module 4B of the succeeding stage, data sets each of M data separated by M points from the FFT output array of the preceding stage are formed and permuted so as to be ~~in a column of one~~ one column. More specifically, data in each data set are arrayed ~~in a column of two~~ in two columns. Since in the FFT output of the preceding stage, M-point data sets (each set constituted by ~~a column of two~~ two columns) are arrayed ~~in a column of one~~ one column, there can be obtained the data set constituted by M data spaced or separated by M points by collecting the data at corresponding positions in the individual sets on a one-by-one basis.

Please REPLACE the paragraph beginning at page 39, line 23, with the following:

Since data in the set are arrayed ~~in a column of two~~ two columns, two data of each column in the group belong to another set consisting of M data separated by M points.

Assuming that read operation is performed on a column-by-column basis, the other column than that being read is not immediately required but repeated read operation is required since only one pipeline FFT circuit is provided. However, because the pipeline FFT circuit is implemented as two-parallel input/output, the other one data of the same set consisting of M data separated by M points is required. In other words, data read operation has to be performed simultaneously from the two groups. The arrangement to this end may be same as that described hereinbefore in conjunction with the method 1 carried out by the data permutating module 3A of the preceding stage. In other words, the data groups obtained from the pipeline FFT circuit of the preceding stage are stored in the buffer memory which is divided into two banks (bank A, bank B), i.e., the odd-numbered groups are stored in one bank with the even-numbered groups being stored in the other bank, respectively. Data is read out one by one, starting from the leading data of the corresponding group in the bank, and hence two data in total are inputted to the pipeline FFT circuit as two parallel input data.